African Invertebrates
A journal of biodiversity research

African Invertebrates 65(1): 9–14 (2024)
DOI: 10.3897/AfrInvertebr.65.103539

Short Communication

A new species of the genus *Ropalidia* Guérin-Méneville from central Africa (Insecta, Hymenoptera, Vespidae)

Ozren Polašek[1,2]

1 *University of Split, School of Medicine, Split, Croatia*
2 *Algebra University College, Zagreb, Croatia*
Corresponding author: Ozren Polašek (ozren.polasek@mefst.hr)

Abstract

Ropalidia chromis **sp. nov.** is described from the Democratic Republic of the Congo. It is characterized by a mixture of morphological features present in two large species groups of that genus, suggesting a separate phylogenetic lineage.

Key words: Social wasp, systematics, taxonomy

OPEN ACCESS

Academic editor: Denis Brothers
Received: 15 March 2023
Accepted: 15 December 2023
Published: 28 February 2024

ZooBank: https://zoobank.org/E6D6D40F-815B-4EEF-BB9E-B75583FCF4AF

Citation: Polašek O (2024) A new species of the genus *Ropalidia* Guérin-Méneville from central Africa (Insecta, Hymenoptera, Vespidae). African Invertebrates 65(1): 9–14. https://doi.org/10.3897/AfrInvertebr.65.103539

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Introduction

Ropalidia Guérin-Méneville is a social-wasp genus distributed in the Ethiopian, Oriental and Australian regions, with 49 known African mainland species (Carpenter 1999; Kojima 1999; Polašek et al. 2022; Polašek et al. in press). The hallmark of the genus is the merged second tergum and sternum, with the exception of three species endemic to the New Guinea mainland that have overlapping sclerites (Kojima 2001).

Most of the African mainland species are divided into the *capensis*-group and the non-*capensis*-group of species, based on their morphology and genetic analysis, with only a few less common species with separate lineages (Polašek et al. in press).

A recent revision (Polašek et al. in press) identified an interesting pattern of increasing yellow or reddish colour and weaker punctation in eastern parts of Africa, as opposed to the primarily black body colour and much coarser punctation in western and central Africa. This pattern was seen across species but also in the intra-specific clusters of *R. guttatipennis* (de Saussure) and *R. aethiopica* (du Buysson), which both become darker or even black in Cameroon, Gabon and the Democratic Republic of the Congo.

This paper reports on a new species from the Democratic Republic of the Congo, characterized by a mixture of morphological features of two species groups of *Ropalidia*.

Material and methods

A single dried specimen from the California Academy of Sciences in San Francisco, USA (CAS) collection was studied and photographed using Leica S9i stereoscopic microscope with an integrated camera. Photographs were stacked using Helicon 6.8.0 (Kharkiv, Ukraine). Metasomal terga, metasomal sterna and flagellomeres are abbreviated as T, S and AF, respectively.

Results

***Ropalidia chromis* Polašek, sp. nov.**
https://zoobank.org/40D46CC1-0288-4394-92D1-8BAD73076D05
Figs 1–6

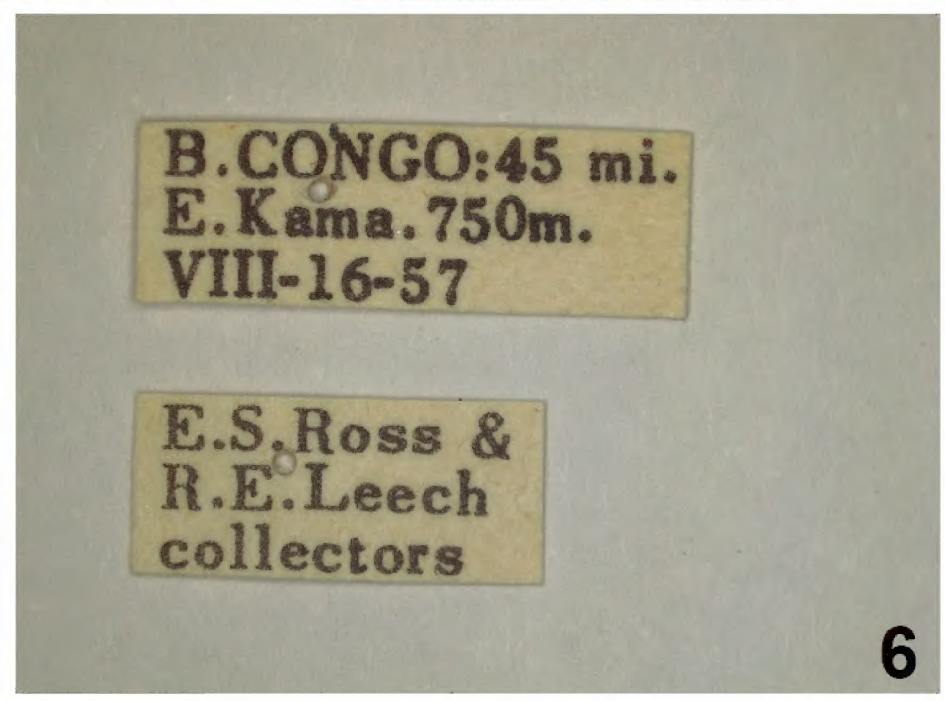
Material examined. *Holotype*: [Belgian] Congo: 45 mi. E Kama [Province of Maniema, DR Congo], 750 m, VIII-16-57/E.S. Ross & R.E. Leech collectors (California Academy of Sciences; Fig. 6); 1♀.

Diagnosis. This species is characterized by the basal cuticular sculpture and larger sparse punctures of the female clypeus, the substantially depressed area above the antennal sockets, elongated scape, thin gena, silvery-yellowish pubescence and setae of the head, mesosoma and metasoma, with angulate and coarsely punctate T1.

Description. Female. Wing length: 8.9 mm.

***Head*.** Head in frontal view barely wider than high (Fig. 1). Clypeus about as wide as long (Fig. 1). Juxtamandibular lobes weakly developed, with shallow excavation (Fig. 1). Clypeal apex projecting well above juxtamandibular lobes, with acute tip (Fig. 1). Clypeus surface with basal sculpture and evenly spaced and well-defined smaller punctures (biphasic punctation pattern), thus resembling numerous *Polistes* Latreille species, but not *Ropalidia* (Fig. 1). Lower half of inner orbit impunctate, upper half with large and coarse punctures (Figs 1, 2). Entire area above antennal sockets markedly depressed; clypeal surface very flattened in lateral view (Fig. 2). Interantennal area elevated and flattened, covered by a punctation same as on clypeus (Fig. 1). Frons coarsely punctate, with weakly bent silvery-yellowish setae that are somewhat shorter than ocellar diameter (Fig. 3). Gena coarsely punctate, punctures diminished close to the occipital carina (Fig. 3). Gena at most half width of the compound eye (Fig. 3). Occipital carina sinuate and complete, reaching mandible (Fig. 3). Interocellar area raised posteriorly, with punctuation similar to that on frons; distance between posterior ocelli about 1.7× as long as distance between anterior and posterior ocellus. Distance between posterior ocellus and occipital carina as long as 0.6× of distance between posterior ocellus and inner eye margin. Eyes asetose (Fig. 2). Scape conspicuously elongate, about twice as long as AF1. AF2 as long as wide (Fig. 1), remaining flagellomeres wider than long; AF8 about twice as wide as long (Fig. 2).

Mesosoma. Mesosoma about 1.4× as long as wide. Pronotal carina complete and sharp, about equally wide laterally and dorsally, broadly rounded on humerus. Pronotum largely and coarsely punctate, punctures merge and create a punctation network close to inferior pronotal angle. Mesonotum 1.15 × as long as wide between tegulae in dorsal view, distinctly convex in



Figures 1–6. *Ropalidia chromis* sp. nov., female **1** head, frontal view **2** head, oblique view **3** head, lateral view **4** T1 and T2, lateral view **5** habitus, dorsal view **6** holotype labels.

Table 1. Comparative analysis of morphology and colouration pattern.

Feature	*capensis*-group	*R. chromis* sp. nov.	non-*capensis*-group
Size (wing length)	6.2–8.5 mm	8.9 mm	8.5–12.1 mm
Clavate female antenna (AF8 width to length)	Yes (2.0×)	Yes (2.0×)	No (up to 1.5×)
Scape to AF1 ratio	Commonly 1.5×	2×	Commonly of equal length
AF2	Commonly about as wide as long	About as wide as long	Commonly longer than wide
T1 punctation and shape	Weak, commonly globular	Strong, angular	Weak, rounded
The lower part of the inner orbit	Impunctate	Impunctate	Frequently punctate
Supraantenal area	Flattened	Depressed	Flattened
Interantennal area	Ridged	Flattened	Ridged
Clypeus punctation	Monophasic	Biphasic	Monophasic
Gena thickness	Commonly less than eye width (as low as 0.5× in *R. crassipunctata* Giordani Soika)	0.5× eye width	Commonly equal, sometimes even broader than the eye width
Inferior propodeal carina	Not developed	Not developed	Commonly developed
Elongated second submarginal cell	No	Yes	Yes
Predominant clypeus colour pattern	Centrally attached spot	Centrally attached spot	Transversal apical yellow line

lateral view, so that anterior third is below level of posterior margin. Median mesonotal suture thin and elongate, reaching more than half of mesonotum length. Mesonotum sparsely and shallowly punctate, punctures more than one diameter apart, shrinking in size towards scutellum. Scutellum flattened, without median carina, coarsely punctate, punctures about twice as large as those on mesonotum. Metanotum flattened and as wide as scutellum, anterior two thirds coarsely punctate, posterior third inflexed downwards and shiny; lateral metanotal angles rounded, but well-developed. Mesopleuron markedly convex, very coarsely punctate, punctures become reticulate dorsally; epicnemial carina very well developed and dull. Metapleuron with very large and shallow punctures close to anterior margin; punctures become smaller laterally, only to increase in size on lateral side of propodeum. Dorsal propodeal carina weakly developed and barely visible underneath pubescence, without inferior carina. Propodeal excavation shallow, shallowly punctate dorsally, impunctate and weakly striated ventrally. Entire mesosoma covered by short silvery-yellow pubescence (about half length of anterior ocellus diameter), with somewhat longer whitish setae on propodeal excavation. Second submarginal cell wide, with elongate median angle.

Metasoma. T1 about half width of T2 in dorsal view, strongly angulate in lateral view, enclosing angle of about 110° (Fig. 4). Anterior half dorsally inconspicuously, minutely punctate, laterally deeply and coarsely punctate. T2 1.2× as long as wide, with parallel sides. T2 and S2 shallowly punctate, with punctures gradually increasing and becoming large and coarse in centre of S2. T2 lamella yellow and translucent (Fig. 4). T2 covered by golden pubescence and yellowish protruding setae that extend over the lamella (Fig. 4).

Colour. Basal colour black (Fig. 1). Clypeus tricolourous, with black border, brown basally attached median spot nearly reaching apex, yellowish-white laterally (Fig. 2). Smaller yellowish spot adjacent to inner orbit, reddish-yellow interantennal area, mandible whitish with brown tip and blackish basal area (Figs 2, 3). Scape

dark brown dorsally, ferruginous ventrally (Fig. 2). Flagellum dorsally blackish, ventrally reddish, with several distal segments orange ventrally (Fig. 3). Pronotum with thin yellow line underneath carina (Fig. 4), scutellum faint reddish postero-laterally, metanotum with two large yellow spots occupying two thirds of total surface, propodeum entirely black (Fig. 1). Legs black, femora with thin reddish line on inner side; tarsi somewhat darker. Wings infuscated, with moderate darkening in tip of basal cell and majority of marginal cell (Fig. 5). T1 with reddish-yellow triangular mark laterally (Fig. 5). T2 with complete posterior yellow band, S2 with partial posterior band (interrupted medially); remaining terga and sterna black.

Male is unknown.

Etymology. The name is a Latinized form of “chrome”, a noun in apposition, with reference to the silvery-yellowish setae and pubescence of the head, mesosoma and metasoma.

Distribution. Democratic Republic of the Congo.

Comparative analysis. This species exhibits features seen in both *capensis*- and non-*capensis*-groups (Table 1). In addition, several features do not resemble either and present apparently autapomorphic features sufficient for species determination, including the depressed area above the antennal socket and a biphasic clypeus punctation (Table 1).

Discussion

The newly described species presents an interesting dilemma, since it does not seem to belong to either of the two large species groups within *Ropalidia*. In addition, it has several unique features, suggesting a separate lineage. Interestingly, it exhibits a homoplastic feature of clypeal punctation with *Polistes* Latreille, while the general appearance substantially resembles Eumeninae, with thin gena and depressed supraantennal area.

Interestingly, both colour and morphology of this species follow the east-west pattern previously described in other African *Ropalidia*, namely a darker basal body colour and stronger punctation in western and central Africa (Polašek et al. in press). In addition, several morphological features present in *R. chromis* sp. nov. are found in other species that are exclusively present in this part of Africa. These include angulate and strongly punctate T1 (present in *R. salebrosa*, a newly described species in Polašek et al., in press), coarser T2 punctation (similar to *R. crassipunctata* Giordani Soika), thin gena (also in *R. crassipunctata*) and a very strongly punctate mesopleuron (also present in *R. brazzai* du Buysson). This suggests converging evolutionary processes that seem to favour such features.

Acknowledgements

Brian L. Fisher, Robert L. Zuparko and Christopher Grinter are acknowledged for the loan of *Ropalidia* specimens from the California Academy of Sciences collection.

Additional information

Conflict of interest

The author has declared that no competing interests exist.

Ethical statement

No ethical statement was reported.

Funding

No funding was reported.

Author contributions

The author solely contributed to this work.

Data availability

All of the data that support the findings of this study are available in the main text.

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